

# Angelo State University Energy Savings Program

## October 31, 2017

The Angelo State University Energy Savings Update is being submitted in accordance with Governor's Executive Order, RP 49, Energy Conservation by State Agencies.

### A. Energy Goals

#### 1. Campus Energy Use

Energy units are converted to kBtu to allow for comparisons of electricity and natural gas usage. Goals and energy use are then stated in kBtu/sq ft. Estimated savings are based on energy consumption for the same time period from the previous year normalized to current energy costs and campus square footage. It does not take into consideration the climate difference between periods.

In the fiscal year for 2017 the entire campus used 79.268 kBtu/Sq Ft. That was a drop of 2.2% from the previous year, with an estimated savings of \$66,246.88. This is the cost savings based on the criteria listed above and the change from the previous year. There has been a drop of 11.2% in the past 7 years.

In Table I, the campus energy use is broken down by utility type. The percent change column is the energy usage change from fiscal year 2016 to 2017.

**Table I: Campus Energy Use (kBtu/Sq ft): FY2010-FY2017**

Utility	FY10	FY12	FY16	FY17	% Change	Est. Savings
Electricity	60.6060	59.9600	59.1652	59.2396	Up 0.1%	(\$2,773.81)
Nat. Gas	28.6709	23.5200	21.8787	20.0284	Down 9.5%	\$69,020.69
Total	89.2769	83.4800	81.0439	79.2680	Down 2.2%	\$66,246.88

In Table II, the campus energy is broken down to compare FY2011 to FY2017; it shows a 5.9% decrease in overall kBtu usage per square feet. The savings is calculated from the usage change in the utility and the current price paid for that utility. The actual cost savings from FY2011 to FY2017 was \$106,547.83 which mainly comes from the drop in price of both electricity and natural gas.

**Table II: Campus Energy Use (kBtu/sq ft): Change from FY2011 to FY2017**

Utility	FY 2011	FY 2017	% Change	Est. Savings
Electricity	61.2330	59.2396	Down 3.26%	\$74,361.73
Nat. Gas	23.0541	20.0284	Down 13.12%	\$32,186.10
Total	84.2871	79.2680	Down 5.94%	\$106,547.83

#### 2. House Bill 3693

In Compliance with House Bill 3693, Angelo State University set a goal to reduce total electrical consumption by 2% for Fiscal Year 2017. Table III below shows the kilowatt hours per square foot for the entire campus quarterly. This is all electrical

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usage whether it is in a building or on the grounds. It shows a 0.12% increase for fiscal year 2017 as compared to the previous year. Overall kwh decreased for the university but so did the total square footage of the campus at year end with some buildings being mothballed. This caused the kwh/sqft to increase show an overall stagnation from the previous year.

**Table III: Entire Campus Electricity Usage in kwh/sq ft**

Fiscal Year Quarter	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	% change from previous year
1st Qtr	4.78	4.61	4.43	4.57	4.70	4.76	4.64	(2.52%)
2nd Qtr	4.34	4.10	4.00	4.03	4.15	4.08	4.03	(1.23%)
3rd Qtr	4.33	4.15	4.04	4.13	4.20	4.14	4.05	(2.17%)
4th Qtr	4.67	4.67	4.55	4.52	4.71	4.36	4.64	6.42%
Yearly Total	18.12	17.53	17.02	17.25	17.73	17.34	17.36	0.12%

### 3. Fleet Management

In FY2017, Angelo State University consumed 31,125 gallons of fuel. In FY2016, Angelo State University consumed 28,892 gallons of fuel. There were the same number of vehicles as the previous year but 3 older vehicles were replaced with new. ASU also increased the number of miles driven by 52% from the previous year.

In Table IV the vehicle fleet is broken down by a number of different variables for fiscal years 2011 thru 2017.

**Table IV: Fleet Vehicle Usage: FY2011 - FY2017**

Vehicles	Number	Miles	Gallons	Cost	Cost Per Mile	Miles Per Gallon
FY2011	69	300,579	27,155	\$85,071	\$0.28	11.0691
FY2012	67	291,577	26,389	\$90,815	\$0.31	11.049
FY2013	67	225,630	20,070	\$68,108	\$0.30	11.2424
FY2014	66	233,940	21,467	\$66,515	\$0.28	10.8977
FY2015*	68	148,339	26,186	\$66,843	\$0.45	5.6648
FY2016*	74	181,722	28,892	\$47,720	\$0.26	6.2896
FY2017	74	381,854	31,125	\$63,359	\$0.17	12.2684

\*The fleet manager is looking into the discrepancies of these numbers and the report will be revised at a future date.

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**B. Current Energy Reduction Plans**

**1. Campus Energy Use**

- A) Continue to monitor the upgrades/replacements to air handlers, electrical equipment and items at the central plant as according to the performance contract Angelo State University has with Tour Andover Controls (TAC). This is a \$13 million dollar energy savings project for the university that is to be paid over the next 15 years (2021) with the money saved from the improvements. The installations were completed in February 2009.
- B) Maintain consistent temperatures across campus and don't deviate to please individuals. The university has changed the original set points in order to save even more energy. For Cooling, a set point of 74 degrees (73 degrees was the original). For Heating, a set point of 68 degrees (70 degrees was the original). This change was adopted by the university in January 2011.
- C) The elimination of personal space heaters.
- D) Informing and training personnel to turn off computers, monitors, printers and such when not in use and overnight.
- E) Closely monitor the utility meters for discrepancies and unexpected usage amounts. Verify anomalies and correct problems.
- F) Inform university policy makers on the worst energy performing buildings and try to eliminate or make those buildings more efficient.
- G) In January 2015 the Student Government Association started implementing a student-led energy conservation effort in the dormitories. The program focuses upon teaching students to turn out lights, set the AC at reasonable temperatures, and other simple energy saving steps that students can take. Essentially, it teaches them about how to be good stewards of their resources.

**2. Fleet management**

- A) Continually improve overall fuel efficiency of fleet vehicles by replacing older, inefficient vehicles with newer, more efficient vehicles.
- B) Continue the aggressive Preventative Maintenance program to maintain all vehicles at their peak efficiency.
- C) Continue to utilize the State's Fleet Data Management System. The Fleet Management office will continue to use the State Fleet database to monitor vehicle utilization, efficiency, maintenance and accuracy of vehicle reporting. Any discrepancies will immediately be addressed with appropriate vehicle custodians.
- D) Educate personnel on the efficient use of University vehicles. The Fleet Management office has informed all vehicle custodians of the Governors' Executive Order and the university's established goal of 12 mpg.

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- E) Continue to expand the use of electric carts. ASU already has newer carts on order that are more efficient and plans to continue expanding the usage of carts over gas powered vehicles in years to come.

**C. Future Energy Reduction Plans**

1. Continue gathering data on the use of roof top solar cells for lowering the costs of electricity. Also continue working with Solar array plant that is planned to be built in the area to possible purchase power from them.
2. The continued infrastructure improvements and use of software monitoring and scheduling under the performance contract.
3. The Information Technology department is looking into different ways to lower the energy consumption of the 1800+ computers on campus.
4. Use energy efficient products when remodeling and expanding buildings. Plan for LEED certifications on any major expansions or new buildings.

**D. Fuel Consumption Reduction Plans**

1. Fleet Management office will network with vehicle custodians to exchange information on vehicle efficiency & solicit additional best practices and other creative initiatives to improve the efficiency of the university vehicle fleet.
2. For all parties to encourage facility technicians and other departments to use electric carts when at all possible.
3. The Fleet Management office will continue to use off site shops to keep the vehicles in the best condition possible to increase fuel efficiency.
4. When funds are available, acquire new vehicles and dispose of older less efficient ones.